Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

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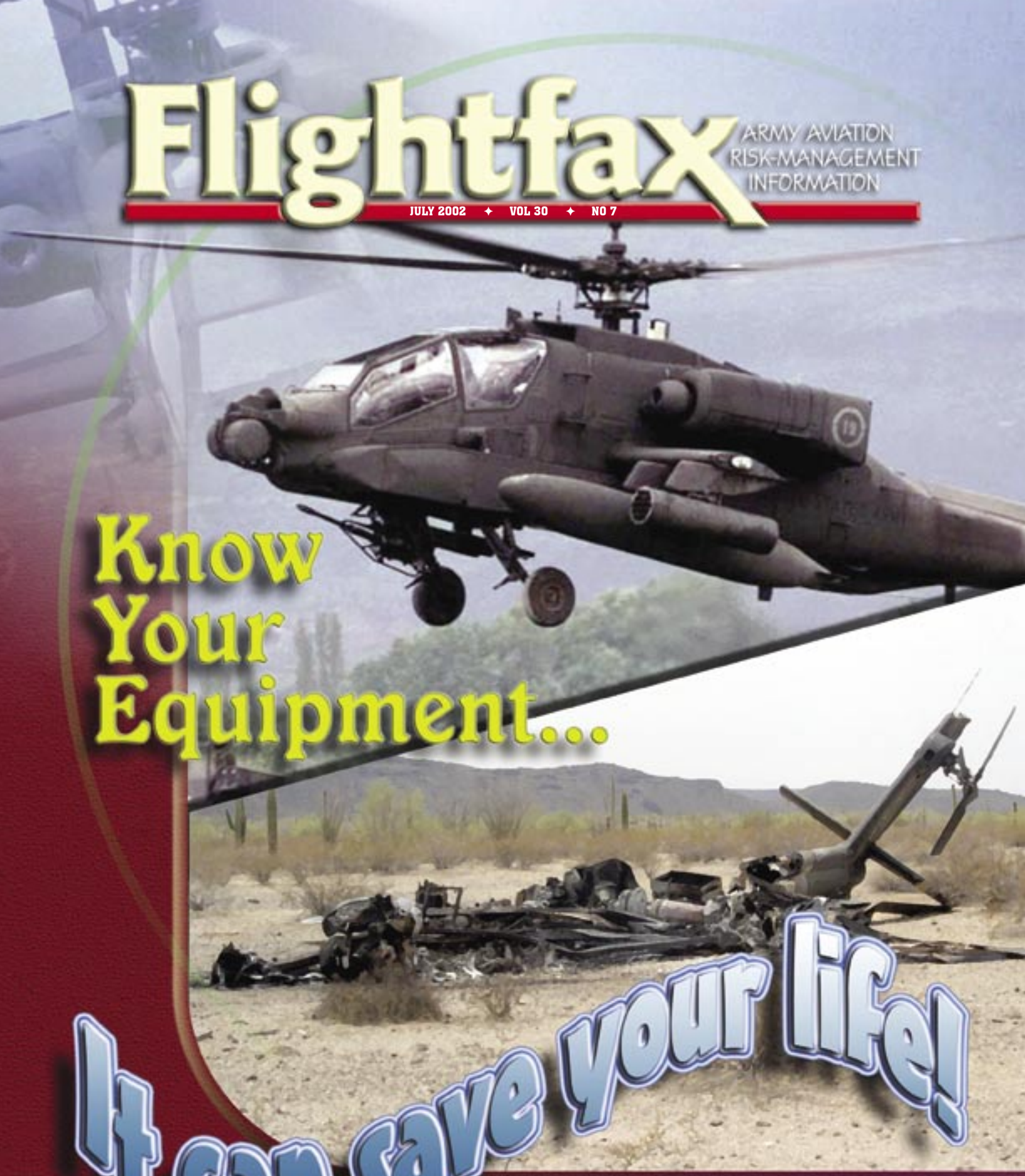

Know Your Equipment...

It can save your life!

Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

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U.S. ARMY SAFETY CENTER

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James E. Simmons
Brigadier General, US Army
Commanding

DASAF's CORNER

from the Director of Army Safety

Enjoying Summer Activities—Safely

July 4th, 1776, marked one of the greatest beginnings in history: an experiment in democracy that has stood the test for more than 225 years. With the signing of the Declaration of Independence, 13 American colonies formed a nation founded on the belief that every individual has the right to "life, liberty, and the pursuit of happiness."

Following the signing of the Declaration of Independence, John Adams wrote to his wife: "I am apt to believe that this day will be celebrated by succeeding generations as the great anniversary festival. It ought to be commemorated as the day of deliverance, by solemn acts of devotion to God Almighty. It ought to be solemnized with pomp and parade, with shows, games, sports, guns, bells, bonfires, and illuminations, from one end of this continent to the other, from this time forward forevermore."

By the early 1800s, the tradition of parades, picnics, and fireworks was established as the way to celebrate America's independence. Unfortunately, many of these and other summer outdoor activities are not risk free.

Fireworks displays; swimming, boating, and other sporting events; backyard barbeques; and particularly traveling with family and friends can be high-risk activities without proper risk management. Accidents resulting in serious injury and death too often mar Independence Day celebrations and summer fun when hazards are not properly identified and controlled.

The Army recently lost three soldiers in an off-duty boating accident, and another soldier died when he fell down a cliff in the backyard of a residence he was visiting. While swimming and boating and other outdoor activities continue to take soldiers' lives each summer, POV accidents remain the number one killer, with fatalities almost 21 percent higher than last year. To help us combat this killer, five new "Drive to Arrive" POV accident prevention videos and a revised POV Risk Management Toolbox are now available on the Army Safety Center's website at **http://safety.army.mil.** These short video clips are great dialogue starters on some of the hazards associated with operating a vehicle. And the toolbox provides commanders with an array of risk management POV accident prevention tools.

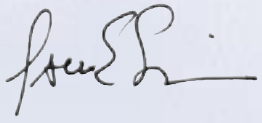
It's critical that commanders and NCOs talk to soldiers frequently about how hazards such as fatigue, speed, and alcohol are risk multipliers. More importantly, we have to make sure soldiers understand that control measures such as seatbelts, child safety seats, personal flotation devices, helmets, etc., can greatly reduce the possibility of accidents and injuries. We each have a responsibility to instill in soldiers a keen sense of awareness of the tragic consequences of failing to effectively manage risks in both their on- and off-duty activities.

As we celebrate our independence and enjoy a variety of summer activities, I urge each of you—soldiers, civilians, and family members—to pause and reflect on the real meaning and value of freedom. I personally thank you for all that you do in defense of America's freedom.

Let's all strive to make celebrations and summer activities as accident free as possible.

Train hard and play hard—but be safe!

James E. Simmons



Investigator's Forum

Written by accident investigators to provide major lessons learned from recent centralized accident investigations.

Two Minutes to Live or Die

The theme of this month's Flightfax is "Know your equipment." When you see a title like that, most of you expect to open the magazine and see a series of stories of how various aircrews managed to bend or break their aircraft or themselves by not knowing their limitations or the flight characteristics of the aircraft. The Safety Center has plenty of those stories, but this won't be one of them. This is a story of a flight crew, specifically the pilot in command, who, when faced with an unknown but potentially catastrophic materiel problem, reacted in a manner that not even a DES Standardization Pilot could question.

The incident aircraft and crew were second in a flight of six AH-64s executing a hasty attack mission over desert terrain. Mission briefs, pre-flights, run ups, and movement to a holding area had all gone as briefed and without incident. Orders came down from higher to execute the attack, and the flight took off towards the attack-by-fire position.

Shortly after establishing 100 knots true airspeed (TAS), at 100 feet above ground level (AGL), the pilot in command (PC) of Gun 02 realized there was something wrong. His first indications were a grinding noise from behind him and a high frequency "rumble" in the anti-torque pedals. He checked his caution panels and saw there were no advisories, cautions, or warnings. He announced to the flight and to the pilot in the front seat of his aircraft that he had a strange noise in the aircraft and he was going to land. The front-seater looked inside and saw no cautions or warning, and only then began to hear the grinding noise.

The PC immediately began a descending right turn out of formation toward a relatively level, obstruction-free part of the desert. He heard Gun 04 call, "Gun 02, you have smoke coming from the aircraft!" followed by flight lead calling "You're on fire!" There were still no cockpit indications, so the PC knew he had a serious problem, but could not diagnose it any further.

This is where the "know your equipment" part comes in. The PC now knew he had a grinding noise, a vibration in the pedals, visible smoke, and perhaps an onboard fire. With no cockpit indications of where the problem was, he realized he could not effectively fight the fire with the onboard systems. On the other hand, he remembered that the most important single action that could be taken by the aircrew for an in-flight fire is to land the aircraft.

The fire could have been in either engine, the Auxiliary Power Unit (APU), the tail boom, or in the transmission area or "Turtle Back." Not knowing what he had, he chose a course of action that gave him the greatest opportunity for a successful landing regardless of where the problem was.

He continued his descent with the intention of conducting a roll-on landing to the unimproved surface of the desert floor. He maintained his airspeed at 60 knots TAS until he was approximately 20 feet AGL, where he began a deceleration for landing.

Almost simultaneously, the front-seater announced "APU fire light!" The PC continued the descent, touched down at 45-50 knots, and rolled to a stop 70 feet after the main gear touched the ground. He then executed an emergency shutdown of the main engines and fired the fire bottles into the APU compartment in accordance with the published emergency procedure.

The crew then exited the aircraft and moved outside the rotor disk to safety. The PC retrieved the portable fire extinguisher to try to fight the fire, but decided otherwise when flames erupted. As a side note to how well he executed the landing, neither the tail wheel locking pin nor the tail wheel strut was damaged.

The estimated total time from the initial indications of a problem to the crew moving away from the aircraft was less than two minutes. One hundred and twenty seconds of critical decision-making ensured the safety of the crew, even though the fire eventually destroyed the aircraft.

The PC made at least four critical decisions after the onset of the emergency.

First, when he heard the noise and felt the vibration, he immediately decided to land the aircraft despite not having any cockpit indications. He knew that the grinding noise was not normal and that a high frequency vibration could mean any of a number of problems. No one could question that decision.

Second, after having reports of smoke from the other aircraft in the flight, he decided to execute a roll-on landing despite the nature of the ground surface. Because there were no cockpit indications, he didn't know the source of the smoke. It could have been from an engine that might fail at any moment. The grinding and high frequency vibration could

have come from a tail rotor driveshaft problem, as well as other high-speed rotating parts. By executing the roll-on landing, he maintained single engine airspeed, maintained enough airspeed to control the aircraft if he lost tail rotor authority, and gave himself the best chance of putting the aircraft on the ground prior to something else going wrong.

Third, when the front-seater announced "APU fire," the PC decided to continue landing prior to executing the emergency procedure. He knew that the APU fire light could indicate either a fire in the APU compartment or a fire in the transmission area. The -10 states, "If the fire is in the transmission area, pulling the APU FIRE PULL handle and discharging the fire bottles may have little or no effect on the fire." He also knew that the emergency procedure could only be conducted from the backseat, and that 15 feet AGL and 50+ knots TAS was not an appropriate time to execute a transfer of the flight controls. By continuing the approach to landing, he gave the crew the best opportunity to survive.

Fourth, after executing the emergency procedure, followed by shutdown and retrieving the handheld fire extinguisher, the PC considered trying to fight the fire. Again, knowing the equipment that he had available, he realized that a 5-pound fire bottle stood no chance against an ever-increasing fire. He wisely decided to move away from the aircraft.

The fire that started while in flight eventually destroyed the aircraft as you can see in the picture. The Accident Board believes that the aircraft's ability to fly was compromised within five minutes of the onset of the emergency. Had the aircraft still been airborne at that time, the outcome would have been tragic. Fortunately, the flight crew was able to watch the fire rather than be a part of it. This was possible because the crew did everything right when faced with a difficult situation and the PC knew his equipment.

Editor's note: The cause of the fire is still under investigation and will be discussed in future articles.

— Aviation Systems and Accident Investigation Division, DSN 558-9552 (334-255-9552)

This article on proper crewmember restraint is one of a series of articles on Aviation Life Support Equipment (ALSE) that will appear in *Flightfax* throughout the coming year.

It has been said that the ability to use proper restraint in life's daily situations is a virtue. In Army Aviation, it is a necessity. A recent accident investigated by the U.S. Army Safety Center involved a Flight Engineer (FE) who was ejected out of the aircraft during the crash sequence. Due to the nature of the accident and a bit of good luck on the FE's part, he sustained only minor bruising and abrasions from the ejection. The FE had left excessive slack in the safety restraint strap on his "monkey harness," or rather his safety restraint assembly.

In addition, the FE used an attachment point on the aircraft that was not designed to restrain a 500-pound horizontal pull. While the FE did remain attached to the aircraft, he was fully ejected. The next enlisted crewmember who is involved in an accident and improperly

restrained may not be so lucky.

Aircrew Integrated System (ACIS) Advisory Message AIS01-02 states that the safety restraint assembly must be adjusted so that the soldier cannot fall from the aircraft. The attachment point in the aircraft must be designed to restrain a minimum of 500 pounds horizontal pull. This attachment point must be located so that the soldier can move about the aircraft freely, but not reach a point where the soldier can fall out of the aircraft.

In addition, the message states, "The safety restraint strap will be connected to the safety restraint assembly and the aircraft attachment point as per the unit ALSE SOP." Normally in utility and cargo aircraft, unit SOPs dictate that the attachment point is on the floor of the aircraft to an approved cargo tiedown ring. Whether the attachment point procedures are in the ALSE SOP or a Safety and Standards SOP is irrelevant, as long as it is addressed, taught to standard, and enforced by leaders.

In this accident, the CH-47D FE attached his restraint strap to a ring at the top of a passenger seat next to the cabin door. The point here is that the unit did not teach, demonstrate, or approve of this attachment point in the aircraft to enlisted crewmembers. Flight Engineer Instructors and Standardization Flight Engineer Instructors must make a point of ensuring that their enlisted crew training programs stress the importance of proper crewmember restraint while operating the aircraft.

If you don't have AIS01-02, units can obtain copies of this message, as well as other ALSE messages by logging on to **https://www.peoavn.redstone.army.mil/acis/index.htm.** If not currently registered at the site, request a user ID and password by following the instructions on the web page. Once registered, log in and select the link "ALSE messages" under quick pick on the right side of the page, then you can view and print all current messages.

Does your unit now use the AIRSAVE vest as your safety restraint assembly? If so, message AIS02-05 is for you. Proper crewmember restraint procedures have been designed to minimize the potential for injury in the advent of an aircraft mishap. Leaders at all levels must enforce these standards.

— Aviation Systems and Accident Investigation Division, DSN 558-9858 (334-255-9858), david.schoolcraft@safetycenter.army.mil

ALSE User's Conference

Commanders, ALSE officers, and other interested personnel are invited to attend the 2002 Army ALSE User's Conference in Huntsville, AL, on 20-22 August 2002. A block of rooms has been set aside at the Huntsville Hilton at the per diem rate of $70.

—POCs: Melanie Barksdale, 256-313-4255, melanie.barksdale@peoavn.redstone.army.mil or John Jolly, 256-313-4262, john.jolly@peoavn.redstone.army.mil

Know What You're Taking

Almost every flight physical has a stamped block on it that is signed by an aircrew member that states that he or she has read and understands AR 40-8, *Temporary Restrictions due to Exogenous Factors*. Unfortunately, we have evidence from some recent accident investigations that shows that some aviators have either been signing the block without really looking at AR 40-8, or ignoring what the reg says. Just in case you are one of the rare individuals who falls into either of those categories, this will bring you up to date.

Although AR 40-8 is a bit dated (a complete revision is in the works), it is to the point and doesn't contain anything that should be a surprise to any aircrew member. The most important day-to-day points are summarized below:

- "Army aircrew members must have optimal physiological and psychological fitness in order to perform their duties."
- "Apart from pathological conditions, fitness may be adversely affected by a variety of exogenous factors, the effects of which may be hardly perceptible and therefore negligible in everyday activities; however, these same factors may have a considerable effect on aircrew efficiency."
- "Aircrew members will inform their flight surgeon when they have participated in activities or received treatment following which flying restrictions may be appropriate."
- "Aircrew members receiving any substance or procedure likely to provoke a systemic reaction shall be restricted from flying duties until declared fit by a flight surgeon."
- "All drugs and medications will be dispensed by or with the knowledge of a flight surgeon."

There are other things in the reg (like the bottle-to-throttle rule) that you need to know, but the aforementioned five points cause the most problems.

Bottom line of 40-8: If you take any kind of medication, prescribed or over-the-counter (OTC), you need to tell your flight surgeon or Aeromedical Physician Assistant (APA). Just to make things clear, this reg does not apply only to FDA approved drugs, but also to "…any substance…likely to provoke a systemic reaction." This includes all types of dietary aids, dietary supplements, and "performance enhancers."

OTCs

Let's talk about OTCs for a minute. We in the aviation medicine world are not totally unrealistic. If you are on leave far from a flight surgeon or APA, and you get a cold or something similar, we don't expect for you to drive 500 miles to see a flight surgeon or APA. It's the same thing if you are a Reserve Component aviator and the flight surgeon/APA is clear across the state. You can take OTC medications that have been approved and published in the Medication Waivers Aeromedical Policy Letter (Class 1: Over the Counter Medications). The approved medications are listed on page 10.

Okay, you take the Sudafed™, but it isn't helping; so you take some Actifed™, but it isn't on the list. What do you do? When you get off of leave, go tell your flight surgeon/APA what you took, when and why, and get an upslip, and/or your records annotated. Be sure to save the medicine boxes or bottles and take those with you, because often OTCs are combinations of medications (that is, they have two or more drugs in one pill, capsule, or liquid), and are acceptable only if each component in the combination is separately acceptable. Any prohibited component makes the combination a prohibited medication.

If you are an RC aviator and the flight surgeon or APA is still across the state, and there is no way to get there—at a minimum, call him or her, and see if you can get approval. It is really this simple. Remember, if you are in an accident and the toxicology is positive for some drug, even if it had absolutely nothing to do with the accident, if there is no record of your having taken it or being cleared to fly, it may be a finding against you.

I know somebody is about to say, "Hey, wait a minute! Diet aids, supplements, and performance

enhancers aren't drugs, 40-8 doesn't apply." Yes, it does! It is true that common OTC diet aids, supplements, and performance enhancers are not regulated as drugs by the FDA, but remember this is from the reg: "…any substance…likely to provoke a systemic reaction…" If you didn't expect any of these things to produce a systemic reaction, whether it be losing weight or building muscle, you wouldn't be taking them.

In addition, many of the common components may provoke serious side effects or adverse interactions with prescribed medications. Some examples are:

- **Ephedra and ma huang:** Cardiac arrhythmias, increased risk of heat injury, muscle breakdown, strokes, and heart attacks. They can interact with common decongestants like Sudafed™ and may interfere with high blood pressure medications.
- **Guarana extract:** This is basically caffeine, and can add to the effects of ephedra and ma huang. It may also interfere with high blood pressure medications.
- **Gingko biloba:** This has been associated with increased bleeding times and spontaneous bleeding. If you are taking something similar to aspirin or Motrin™ which can also increase bleeding time, the effect can be worse.
- **Vitamin E**, ginger, and garlic: All have been associated with interfering with platelet function and may increase bleeding time.

One of the biggest problems with all the supplements/enhancers is that you may be inadvertently "overdosing" on one or more of the components, especially if you are taking more than one product. (Of course, there are some people who deliberately overdose using the "if one is good, then eight are better" philosophy.)

Another problem can be quality control. Although some manufacturers have voluntarily submitted to having inspections so that they can get certification from the United States Pharmacopoeia, most haven't. So there is no guarantee that you are getting the dose listed on the bottle. You may be getting more or less; matter of fact, you may not be getting what is listed on the bottle at all!

Oh yeah—one more thing—ephedra has been reported to make some people positive for amphetamines on urinalysis. In the final analysis, these products may not be totally benign, and are not allowed under AR 40-8.

The REAL bottom line

If you are taking any medication that has not been prescribed by a flight surgeon or APA; if you are taking an OTC medication not on the list of approved medications; or if you are using any kind of dietary aid, supplement, or performance enhancer, you need to go see your flight doc or PA BEFORE your next flight.

Self-medication, it's not just a medical issue…

The pilot, a CW5, had gone home on leave to see his parents in a very rural part of the country, far from any military facility, let alone a flight surgeon. A couple of days before the end of leave, the pilot came down with a headache that just wouldn't go away, despite aspirin and Motrin™. Becoming desperate, the pilot took a pill his mother, who had occasional migraines, offered. His headache went away. Two days later, he drove back to duty without ever asking his mother what he took.

However, being less than lucky, the pilot arrived back at his home station just in time to take part in a company 100% urinalysis. A short time later, the pilot was called into the commander's office and read his rights, because he had come up "hot" for opiates. Because there was nothing in his medical records or anywhere else to explain why he had the positive urinalysis, he was well on his way to a flight evaluation board (FEB) or worse.

Fortunately, he remembered that he had taken something at home. Unfortunately, his mother didn't remember which of her headache pills she had given him. One of them did contain codeine, which could have accounted for the urinalysis.

In the end, the pilot was saved because he was given the benefit of the doubt because of his impeccable reputation. Had it been a different commander or a different pilot, the ending might not have been so happy.

Moral(s) of the story

1. If you don't know what you are taking, don't take it.
2. If you do take something, write down what, when, where, and why you took it.
3. Tell your flight surgeon or APA you took it.
4. Self-medication isn't just medical; it's a legal issue as well.

—LTC Robert Noback, USASC Flight Surgeon, DSN 558-2763 (334-255-2763), robert.noback@safetycenter.army.mil

Approved Over-The-Counter Medications

Approved OTC medications may be used by soldiers only for short-term use and only when a flight surgeon or APA is not available.

A primary concern with frequent or chronic use of any of these medications is that their use may mask serious underlying problems, or even cause problems, such as overuse of aspirin causing an ulcer. A flight surgeon or APA must be consulted if using the following OTC medications frequently.

- **Antacids (Tums™, Rolaids™, Mylanta™, Maalox™, Gaviscon™, etc.):** When used occasionally or infrequently.
- **Artificial tears (saline or other lubricating solution only):** Visine™ or other vasoconstrictor agents is prohibited for aviation duty.
- **Aspirin/ acetaminophen:** When used infrequently or in low dosage.
- **Cough syrup or cough lozenges (Guaifenesin {Robitussin™ plain}):** Many OTC cough syrups contain sedating antihistamine or Dextromethorphan (DM) and are prohibited for aviation duty.
- **Decongestant Pseudoephedrine (Sudafed™):** When used for mild nasal congestion in the presence of normal ventilation of the sinuses and middle ears (normal valsalva).
- **Kaolin and Pectin (Kaopectate™):** If used for minor diarrhea conditions and free of side effects for 24 hours.
- **Multiple vitamins:** When used in normal supplemental doses. Mega-dose prescriptions or individual vitamin preparations are prohibited.
- **Nasal sprays:** Saline nasal sprays are acceptable without restriction. Phenylephrine HCL (Neosynephrine) may be used for a maximum of 3 days. Long-acting nasal sprays (oxymetazoline {Afrin™}) are restricted to no more than 3 days. Use of neosynephrine or oxymetazoline for longer than the above time must be validated and approved by a flight surgeon. Recurrent need for nasal sprays must be evaluated by the flight surgeon. Use requires the aircrew member to be free of side effects.
- **Psyllium Mucilloid (Metamucil™):** When used to treat occasional constipation or as a fiber source for dietary reasons. Long-term use (over 1 week) must be coordinated with the flight surgeon due to possible side effects such as esophageal/bowel obstructions.
- **Throat lozenges:** Acceptable provided the lozenge contains no prohibited medication. Benzocaine (or similar analgesic) containing throat spray or lozenge is acceptable. Long-term use (more than 3 days) must be approved by the local flight surgeon.

VFR or VMC? Let's Be Clear About What We Mean!

I've just returned from another international symposium during which the spatial disorientation (SD) hazard in military and civilian aviation was discussed. For days, I listened as reports of SD research findings were presented. Being a "seasoned" instructor pilot, I was, and continue to be, dismayed by the synonymous use of the abbreviations: VFR (visual flight rules) and VMC (visual meteorological conditions). The terms "visual flight rules" and "visual meteorological conditions" are the essence of their definitions. One refers to rules we must follow, the other to meteorological conditions we fly in. Sounds easy, but apparently, it's not. It's bad enough that pilots say VFR when they mean VMC and vice versa, but countless SD researchers from various agencies (military and civilian) are doing the same by using these terms indiscriminately and interchangeably.

So what's my problem with this and why does it bother me so much when these terms are used so loosely? Because, it's very important to know the difference between VFR and VMC when compiling research data in order to develop conclusions about "SD-attributable" or "pilot error" findings. It's *even more important* to understand and apply these terms during the conduct of a flight. It's crucial when you're the pilot-in-command of an aircraft and are responsible for the safety of the aircraft and its occupants. It's imperative you know the difference when you are responsible for avoiding those conditions that make SD more likely to occur.

Every symposium (and safety center) is filled with accident reports attributed to SD that were caused by pilots continuing their missions into deteriorating weather and/or visibility. Why? Because, instead of maintaining VFR, they were actually maintaining only VMC. Having listened to the countless reports, I have come to the conclusion that, if the aviation community could make a clear distinction between VFR and VMC, we could save some lives and aviation assets.

It's very probable that most pilots could easily define VFR and VMC during a table discussion. However, during an actual flight, I challenge instructor pilots to ask their less experienced unit pilots if they are maintaining VFR or VMC. Chances are good that if the pilot can see the ground, the response will be VFR. They will come to that conclusion without considering what class of airspace they're in and without considering cloud clearance and visibility requirements in order to maintain "VFR" in that airspace classification.

It seems that pilots tend to forget that the "R" in "VFR" stands for "rules." We, as Army pilots, must comply with these rules, and in order to comply, we must be able to apply these rules during our pre-mission planning and during the actual flight. In a peacetime environment, there are usually three options available if, at any point during the flight, weather conditions change and the VFR (visual flight rules) can no longer be complied with:

1. Land (if possible);

2. Return to or proceed to an area or class of airspace that allows compliance with the VFR, or;

3. Request an Instrument Flight Rules (IFR) clearance.

During wartime, SOPs must address minimum weather requirements and recovery options must be established and complied with.

We need to do a better job in applying these VFRs during our flights, and that begins with understanding and using the proper terminology. Let's be clear about VFR and VMC. It will pay dividends in saving lives and assets.

References: DOD FLIP General Planning, AR 95-1, FAR Part 91.

The opinions, interpretations, conclusions, and recommendations are those of the author and are not necessarily endorsed by the USAARL or the U.S. Army.

—Art Estrada, Research Helicopter Pilot, U.S. Army Aeromedical Research Laboratory, DSN 558-6928, (334-255-6928), art.estrada@se.amedd.army.mil

Familiarity Can Breed Overconfidence

Moments before the aircraft crashed in mountainous terrain, it was flying about 50 feet above the ground at an indicated airspeed of 60 knots. After flying over basically flat terrain, the pilot of the aircraft had initiated a right descending turn into a valley. Surface winds, as reported by the tower, were 150 degrees at 30 knots, which created a right quartering tailwind condition for the aircraft just before the descent into the valley.

When the pilot cleared the leeward side of the valley, he encountered a downdraft condition. He had noticed just before he crested the valley wall that the air was becoming a little bumpy and the winds were beginning to pick up, indicators that excessive turbulence and downdraft conditions existed in the vicinity of the southwesterly wall of the valley. With the combination of at least a 30-knot quartering tailwind, a planned descent, entering a downdraft condition, and an initiated right turn, rate of descent increased so rapidly the pilot was unable to keep the aircraft from crashing.

Having flown in the mountain environment for 2 years without difficulty, the pilot believed he was fully capable of coping with the environment. But he was unprepared for the effect of turbulent wind conditions when he began his descent into the valley.

Aviators cannot take for granted the capability of their aircraft to perform, even when flying missions have been routinely accomplished in the past.

Another pilot, experienced in mountain flying, placed his helicopter in a position where power required exceeded power available because he incorrectly computed his performance planning card data, computing a higher available torque for out-of-ground-effect hover than the engine was capable of producing. As this pilot was making an approach to land downwind along the right side of a steep valley, the low rpm audio sounded and the light came on. Sensing he was not going to make the selected landing area, the pilot, at an altitude of about 100 feet, began a left 180-degree turn with the airspeed below effective translational lift. The helicopter crashed and came to rest at the bottom of a ravine.

The pilot, during his pre-mission planning, incorrectly computed maximum torque available, torque required to hover in-and out-of-ground effect, predicted out-of-ground effect hover torque, and maximum allowable in-ground-effect and out-of-ground-effect gross weight. Also, before taking off from his field site, the pilot performed an out-of-ground-effect hover check which indicated more torque available than he had predicted, thus reinforcing a feeling of overconfidence by seeming to verify the erroneous performance data he had computed.

Aviators cannot take for granted the capability of their aircraft to perform, even when flying missions have been routinely accomplished in the past.

If pilots, who are trained and experienced in mountain flying, can have accidents like these, anyone can.

Where performance planning is concerned, “close” isn’t good enough. Pilots must plan carefully and accurately, and they must take into consideration any changes encountered from initial takeoff to final landing.

—Reprint from Flightfax

"Why So Many Aviation Accidents?"

Whether it's perception or reality, media reports can lead most people to believe that the accident rates are going up and statistics are off and running in the wrong direction. It takes only a few high-profile accidents in a short period of time to ring all sorts of alarm bells. This is when we start looking at statistics.

For the purpose of this article, I asked and obtained basic aviation accident statistics for the past 5 years, which were provided by our Operations Research/Systems Analysis (ORSA) staff. I asked for the total number of Class A-C aviation accidents per aircraft, per year, and their potential causal factors.

Although we're only halfway through 2002, it is being perceived as a really bad year. The Army has increased flying hours 10% this year in comparison to the 5-year average, but has experienced a 46% increase in the Class A accident rate over the 5-year average. Part of the reason for the increase is the harsh environmental conditions that we have flown in this year in comparison to previous years. However, we have been able to maintain a similar Class A-C accident rate as last year, which tells us that while we are experiencing approximately the same accident rate as last year, the accidents are more severe.

Considering the advances in manufacturing and reliability of the equipment, the human is often the weakest link in the accident chain. Analysis of the FY02 severe (Class A-B) flight accident reports reveals that adverse environmental conditions and/or crew coordination errors were present in nearly half of the accidents. Another significant factor was the lack of sound risk management before and during the tasks being executed. Leader failures in risk management and individual errors in indiscipline or overconfidence were present in over one-third of the accidents. Poor decision-making has to rank number one in the "issues" we should strive to address. Small decisions can have a big impact on mission success. For example, selecting the right crew(s), weather decisions, and weighing the risks versus benefits for a given mission all need to be taken into consideration.

Aviation Class A-C Accidents & Rates FY97–FY02

FY	Hours	Class A	Rate A	Class B	Class C	Class A-C	Rate A-C	Fatals
97	620155	8	1.29	9	44	61	9.83	7
98	568070	9	1.58	3	46	58	10.21	2
99	560345	13	2.32	4	45	62	11.09	13
00	606060	4	0.66	2	46	52	8.62	2
01	616438	9	1.46	7	52	68	11.04	11
02	653266	14	2.14	11	47	72	11.03	13

Figures are through 31 May of each year.

FY02 Aviation Class A-B Accidents by Type Aircraft

Aircraft	Class A	Class B	Total Class A-B	Military Fatals
OH-58D	2	5	7	0
AH-64	4	2	6	2
C/MH-60	3	1	4	2
C/MH-47	4	0	4	8
UV-20A	1	0	1	1
Other	0	3	3	0
Total	14	11	25	13

Conditions Present in Majority of FY02 Class A-B Flight Accidents*

• Adverse Environmental Conditions	45%
• Crew Coordination Errors	45%
• Leader Failure/Risk Management	40%
• Individual Error (indiscipline, overconfidence)	35%

* The fact that the numbers do not total 100% is due to there being more than one present and contributing factor in many of the accidents.

Why are we having so many aviation accidents? Better questions are, "What can we do to prevent the next accident?" or What can you do to help your unit achieve "Mission first, Safety always?" Let's start with each one of us doing our part... Use proper risk management tools, be professional in your actions and your thinking, know your aircraft—its limitations and its strengths, and emphasize proper power management when you are on the edge.

—Paula Allman, Managing Editor, Flightfax, DSN 558-9855 (334-255-9855)

WAR Stories

Risk management lessons learned

Don't Be Afraid to Say No

It was a nice summer day, perfect for flying. My guard unit was tasked with taking an aircraft part to another unit out of state, and picking up a replacement part. I was the lucky one chosen to be the co-pilot on the UH-1 going on the mission.

My PC was a very experienced ex-Vietnam pilot with many hours behind the stick of a UH-1, so I had no reason to feel any uneasiness about flying with him.

We took off in the late morning with one crew chief on board. The first portion of the flight went without incident; in fact, it was a little boring as visual flight rules (VFR) cross-country flights can be.

About midway through the flight, I noticed some cumulus clouds forming and they looked a little less than 500 feet above us. I told my PC that I was descending from 1500 to 1200 feet to give us a little more clearance. He said not to worry about it, that the aircraft could fly just as well through the clouds.

I maintained my altitude as he had instructed and did my best to fly around the clouds. We landed at our destination, exchanged our parts, and then went to file our return flight back home.

While the PC was filing, I noticed the weather radar looked quite nasty along our route back home. I mentioned this to the PC and he had little or no concern. It was now early afternoon, and he mentioned he didn't want to get stuck there.

After a short conversation with the crew chief about it, I mentioned it again to the PC. There were quite a few thunderstorm cells very near our route back home, and I didn't think we should take off until the weather cleared a bit more. The PC said we could make it back without going through the storms, so we were off.

As soon as we took off, I could see cumulonimbus clouds on the horizon. Before I knew it, we were right in the middle of a torrential rainstorm. I was, and had been, on the controls and had to slow down to near zero airspeed because visibility was zero.

The PC took over navigation at this point and was telling me which way to go to try to avoid the huge rain cell we had gotten into. I was flying purely by what treetops I could see out of my side window. Not fun!

It was getting dicey since we were not familiar with the area and had become disoriented trying to dodge the rain cells. At one point, we almost hit wires that weren't visible until the last minute.

I was doing my best to get out of the heavy rain while listening to my PC's directions. I became aware that we were nearing a small airport that we had passed on the first leg of our flight, and we needed to make an advisory call.

I was still flying the aircraft at this time, and I asked my PC what the frequency was for the airport because we needed to make a call.

I heard nothing in response. I asked two more times for the frequency and received no response.

At this point, I felt the aircraft make a wild bank to the right and then I heard the PC make an advisory call to the airport. I then realized that the PC had taken the controls and performed a wild evasive maneuver, which by the way was totally unnecessary since there was no traffic at the airport.

I asked him what happened and he began to chew me out for not making an advisory call to the airport. I asked if he had heard me call for the frequency three times, and he said nothing. The PC started giving me a hard time, telling me not to get all pissed off. I knew the cockpit was no place for an argument, so I didn't say anything.

We finally escaped the rain and landed at another small airport for re-fuel. It was then that I had a discussion with the PC about why he had not considered my input throughout the flight. We both had been through the Army Crew Coordination Course, so I knew he was capable of being part of an integrated crew. After I asked him why he hadn't given me the frequency, he seemed to realize he had acted inappropriately and apologized. The rest of the flight went without incident.

Crew coordination problems arise when the less experienced aviator is afraid to question the actions of the more experienced aviator for fear of reprimand. Whenever you are in the cockpit, the entire crew must pull together as one unit.

Lessons learned

Our mission was accomplished, and I learned a valuable lesson: whenever you are in the cockpit, the entire crew must pull together as a unit.

It's true that hindsight is 20/20. I was a brand new WO1 and didn't want to make waves; besides, who was I to tell an ex-Vietnam pilot with thousands of hours what to do. I'll tell you who I was. I was a viable, valuable part of the crew with a duty to do the right thing no matter how unpopular.

Now that I have more experience, I can look back and see what I should have done. I should have been more assertive about taking off in questionable weather. In my case, everything turned out okay, but the potential for disaster was very much present. I can't change what I did or didn't do; but, I can share it with other inexperienced pilots so they can learn from my mistakes.

—CW3 Catherine R. Luncinski is attending the Aviation Safety Officer Course, ASOC-02-004, U.S. Army Aviation Center, Fort Rucker, AL, catherine.r.luncinski@us.army.mil

Learned a lesson lately?

We don't have to learn our lessons the hard way—through accidents. We can also learn from close calls, near misses, and minor mistakes—both our own and those of others. In fact, we must do so, because the cost of accidents is paid in lives, dollars, and readiness.

Share your lessons learned with all of Army Aviation by sending your "War Story" to *Flightfax*:

- U.S. Army Safety Center, ATTN: *Flightfax*, Bldg. 4905, 5th Ave., Fort Rucker, AL 36362-5363
- **flightfax@safetycenter.army.mil**
- Fax DSN 558-3003 (334-255-3003), ATTN: *Flightfax*

SAFETY ALERT NOTICE

Water Safety Trend

The Army is well into the season of water activities, and early indications are that this is likely to be a bad year. Soldiers are drowning at more than double the normal rate, and the hottest months are just beginning. Drowning has become the second most likely cause of accidental death for Army soldiers, surpassed only by POV accidents.

At present, 10 soldiers have drowned during water-related recreational activities. Commanders and senior NCOs can control this trend by reaching into the off-duty behavior of their soldiers, and teach and enforce the requirements for safe swimming, boating, and use of flotation gear.

Seven of the ten soldiers that drowned went overboard. In all cases, the soldiers had not planned to enter the water at all, but were caught off guard and went overboard from a small fishing boat or similar watercraft. Accident reports on hand indicated that life jackets were rarely in use. The other three drownings involved swimming and scuba diving in both a pool and open water.

By looking at accident statistics for the last 10 years, a pattern of drowning situations can be determined. In that timeframe, 141 incidents occurred, some involving more than one fatality. The most significant fact is that only 1 death occurred at a pool with Army lifeguards present, while unguarded pools were the setting in 9 deaths.

By far, the most dangerous environment is the open water or shoreline. Forty-one percent of the drowning incidents were on lakes and rivers, while sixteen percent were ocean swimming fatalities. Military training operations accounted for 11% of the drownings; another 9% drowned when they drove their vehicle into the water.

Consistent factors in Army drownings include overconfidence in swimming ability, alcohol involvement, and breakdown of the buddy system. In recreational settings, these failures sometimes work together, setting a soldier up for a tragedy. Often the victim was not alone, but no one was able to control the situation or complete a rescue.

Command water safety programs should target these threats. Emphasize the requirements for operational risk management, individual training, use of personal flotation devices, and responsible alcohol consumption. Survey recreation areas in your command area of operation using a risk management approach to determine if off-limits prohibitions are warranted. Above all, leaders must recognize their responsibility for the readiness of their soldiers, both on and off duty, and implement controls to mitigate risk and prevent soldier injury or death. The Army's mission depends on it.

JAMES E. SIMMONS
BG, USA
Director of Army Safety

U.S. ARMY SAFETY CENTER

Get Your Cold Weather Equipment NOW

Don't wait until the last minute. Start thinking about it now before it gets cold to prepare for the winter months ahead. Are you prepared? Do you have the proper equipment on hand? Are you trained to use the equipment?

Improper operation of space heaters is normally the start of big problems. Proper operation begins by identifying a soldier to operate the heater, followed by heater-specific training that results in licensing the soldier.

AR 600-55, *The Army Driver and Operator Standardization Program*, provides guidance on selecting, training, and licensing heater operators. Unit personnel should use the appropriate technical manual for heaters to develop lesson plans for training. A hands-on performance evaluation is the best way to determine the skill level before licensing.

—POC: MSG Shane Curtis, Aviation Systems Division, DSN 558-9859 (334-255-9859), shane.curtis@safetycenter.army.mil

The following are the most common types of heaters that are used today:

Air Traffic Controllers To Use Next Generation Doppler Radar

As part of its efforts to modernize the national airspace system, the Federal Aviation Administration (FAA) has installed a system at air traffic control facilities that will bring highly accurate weather information directly to controller displays. For the first time ever, air traffic controllers will be able to see advanced Doppler weather information on the same screen as aircraft position data.

The Weather and Radar Processor (WARP) will enhance safety by allowing controllers to reroute air traffic to avoid severe weather areas. Air traffic controllers at the Fort Worth, Texas Center started using WARP on their displays the second week of June.

FAA recently replaced outdated controller displays with state-of-the-art equipment. The capabilities of the new display systems enable WARP to provide real-time aviation weather data on the same screen as aircraft position data, using different colors to show varying intensities of precipitation.

WARP also shows precipitation at three different altitudes, allowing controllers to concentrate on the weather appropriate to the precise location and altitude of a particular aircraft. The weather information is shown as background graphics to the aircraft data on the display. This configuration gives the controller a more accurate view of localized precipitation and supports quicker evaluation of the current weather's impact on a particular airspace sector.

—FEDtechnology.com, Federal Weekly Technology Email Newsletter for Federal and Military Managers and Employees, June 11, 2002

A Call For Articles

Looking for your stories for the upcoming September-November issues on the following subjects:

■ Cold Weather Operations (Whiteout, aviation maintenance in a cold environment, physiology of cold weather flying.

■ GPS/Weather radar, cockpit commo (task overload, aircrew coordination)

■ Your in-flight emergency stories.

Don't worry if you think you can't write. That's why we have editors. The benefit of your story is what matters. Send your stories to Paula Allman at **flightfax@safetycenter.army.mil**.

Every Drive Counts

What does jumping out of an aircraft and driving a vehicle have in common? Safety must be the first concern for both at all times. There is never a time when safety shouldn't be the first thing considered—whether driving to and from work or jumping out of an airplane. Just like every jump counts, every drive counts. This is the central message in an unconventional safety film produced by the U.S. Army Safety Center in conjunction with the Airborne School at Fort Benning, Georgia.

In the safety film, "*Every Drive Counts*," the Safety Center offers a new perspective concerning off-duty traffic safety aimed directly at young soldiers. The MTV-style movie has a sound track with Grammy-award winning music and a clear safety message delivered during orientation by the Command Sergeant Major—

1. What are the hazards?

2. What can I do about them?

3. Am I disciplined enough to make the right choice at the right time?

Each soldier's success is based on his ability to make the right decision when confronted with hazards on- and off-duty.

Due for release in time for Labor Day safety presentations, the video will be available at installation safety offices and local Training Service Centers. When released, it will be advertised on the website **http://safety.army.mil**, where you can place an online order for your own copy.

POC: Rebecca Nolin, Media and Marketing Division, DSN 558-2067 (334-255-2067), rebecca.nolin@safetycenter.army.mil or Al Brown, Strategic Programs, DSN 558-3421 (334-558-3421), james.brown@safetycenter.army.mil

ACCIDENT BRIEFS

Information based on preliminary reports of aircraft accidents

AH-64

Class E
A model

■ While conducting a ground-controlled approach (GCA) (straight and level at 3700 feet MSL, 100 KIAS) with copilot-gunner (CPG) on the controls, the aircraft began to gyrate. The PIC began to check the hydraulics and digital augmentation stabilization equipment (DASE). He then assumed control of the aircraft and prepared for an emergency landing. They executed a roll-on landing at home station. After conducting a maintenance test flight, it was determined that the altitude and heading reference system (AHRS) was the fault and was replaced. The aircraft was returned to service.

■ Flying straight and level at 500 feet during multiship operations in the day when #1 engine NP went to 98% on instruments and TQ went to 0%. TGT and NG had normal and steady indications. PC decided to do roll-on landing at nearby AAF with no further complications and performed normal engine shutdown. Determination was made to safely do a one-time flight back to home station. Troubleshooting determined that the ECU was the fault, and MOC was completed okay. Test flight was performed and the aircraft was released back to service.

OH-58

Class A (Potential)
D-R model

■ Acft contacted wires during a training flight and landed hard on a major thoroughfare, coming to rest on its side (rolled 90°). Crew was able to egress unassisted and notified the local CoC. Damage initially assessed as class B. Pending further ECOD, potential exists for class A damage to the airframe. Mast-mounted site intact, but crystal cracked. Local USAREUR team will investigate.

Class E
D model

■ While in fwd flight at 10 KTS, aircraft experienced a decrease in power with LOW ROTOR audio and warning message. Immediately after this, the aircraft experienced an increase in power with HIGH RPM ROTOR audio and warning message. MAST TORQUE TIME LIMIT warning, ENG OVER TORQUE warning and XMSN OVER TORQUE warning. Aircrew landed aircraft in place and performed a normal shutdown. The aircraft was returned to home station for maintenance.

UH-60

Class B
L model

■ Aircraft sustained damage during an air assault (exfiltration) landing iteration. Rotor blade flexing resulted in damage to the main rotor blades and possibly the hub, ANALQ 144, tail rotor drive shaft, and the intermediate gear box. ECOD still pending.

Class D
L model

■ While in flight heading 180 degrees, 100 KIAS, 125 feet AGL, the UH-60L aircraft cut through three sets of electrical wires. The aircraft still had controllability and no visual damage (while in flight); therefore, flight was continued to an approved helicopter landing zone to the west of the wire strike location.

Class E
A model

■ Aircraft was day VFR at a hover, transmission experienced fluctuation from 45 PSI to 30 PSI, and down as low as 0 PSI. PC landed and shutdown the aircraft. The mission was aborted. Maintenance troubleshooting determined that replacement of the transmission main module is required.

CH-47

Class A
D model

■ The number one engine surged to 110-111% during (MOC) engine checks; aircraft became airborne as crew attempted to control it during the surge. Subsequent hard landing resulted in major structural damage, requiring depot-level maintenance.

MH-47

Class C
D model

■ Aircraft sustained damage to the aft right landing gear during touchdown/roll-out to desert HLZ in brown-out conditions.

E model

■ Right front landing gear of MH-47E set down into an eroded area on the DZ during landing. Damage to landing gear & fuselage (sheet metal).

T-34

Class B
C model

■ T-34 returned to Pope following a photo chase mission on Normandy DZ. The T-34 landed safely and was returning to parking on yellow ramp. While on the taxiway, the left brake failed and the T-34 departed the taxiway to the right and came to rest in a concrete drainage ditch. No injuries to the crew. The aircraft was recovered from the ditch and is in the ABNSOTD hangar. ECOD: $250K

ALSE

It won't save you if you can't reach it.

Check your ALSE gear... can you get to it?